Researcher Challenges Conclusion That Apes Can Learn Language

By DAVA SOBEL

Thirteen years of research involving gorillas and chimpanzees that were apparently taught human language have been thrown into question by new evidence that, according to a researcher, shows that the apes may be doing nothing more remarkable than a dog does in learning to sit or heel. Investigators are already at loggerheads in what promises to be a major dispute about whether the human capacity for language is unique.

Herbert S. Terrace of Columbia University, who spent four years teaching sign language to a chimpanzee named Nim Chimpsky, now asserts that the success of his own and related efforts can be explained as mere prompting on the part of the experimenters and mistakes in reporting the data. "Much of the apes' behavior is pure drill," he said. "Language still stands as an important definition of the human species."

But R. Allen Gardner of the University of Nevada, the first to train a chimp, Washoe, to use sign language, says that Dr. Terrace's argument is biased and unfounded. "Dr. Terrace has grossly oversimplified the problem," he said.

Other scientists in the field are divided in their response to Dr. Terrace's report. Some suggest that his study may have been too brief or that he employed too

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Scientists at Odds on Receptivity Of Primates to Human Language

Two researchers using sign language to communicate with a chimpanzee

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many people in teaching Nim Chimpsky sign language.

His report will appear next month in the journal Science, as well as in a book, "Nim," to be published by Knopf, and an article in Psychology Today.

Dr. Terrace does not expect his work to be received with enthusiasm by some workers in the field. "I'm prepared to defend this," he said.

Findings Applied to Children

Besides testing the assumption that human capacity for language is unique, the research with apes has helped psychologists appreciate the process of language acquisition in children. Some findings have been applied to the problems of teaching the mentally retarded.

Although several apes have acquired large vocabularies, thanks to their prodigious powers of memory, Dr. Terrace maintains that they have not yet proved themselves capable of stringing words together into meaningful sentences, which is the essence of any spoken or sign language.

His original intention was to raise Nim as a human child in a human family, in the hope that he would learn to use signs "for some of the same reasons that motivate a child to learn to talk." Other goals were to "define more clearly what it means to be human," to see whether humans can communicate with other intelligent beings and to discover what is distinctive about human language.

In the training, which began in November 1973, Dr. Terrace reports, Nim seemed to be able to make creative short phrases. But in 1978, after the study ended because funds ran out and Nim was returned to the Institute for Primate Studies in Norman, Okla., the researcher reviewed all the videotapes and photographs and lists of Nim's utterances and realized that he had overrated the animal's achievement.

Rarely Started Conversation

Taking three and a half hours of videotape and scrutinizing each minute for as long as 20 to 30 minutes, Dr. Terrace saw that Nim had rarely initiated conversation; nearly 90 percent of his signs were responses to his teachers' signs. About half his signs showed overlap, containing part or all of what his teacher had just signed.

If he wanted something, he always tried to grab for it first, signing only when his first attempt failed. Most of his phrases were built on what Dr. Terrace calls wild cards — words like "me," "hug," "Nim" and "more" — which were sure to elicit a positive response from his teachers.

Moreover, he interrupted constantly, failing to grasp the two-way nature of conversation that children come to appreciate. And at the stage where he should have been building longer and longer phrases that might display some semblance of grammar, Nim just kept adding words without adding meaning. He would wind up with nonsense run-ons such as "Give orange me give eat orange me eat orange give me eat orange give me you."

When exposed to other chimps that knew how to sign, Nim never signed with them unless a teacher was present, coaxing him to do so.

Dr. Terrace then reviewed available films of other animals similarly trained. He concluded that their ability to use signs in novel ways had been similarly misinterpreted.

Identifying a Swan

One of the more compelling anecdotes that supported the apes' understanding of language was reported by Roger Fouts of the University of Oklahoma. The first time Washoe saw a swan swimming nearby, she signed "water bird." But, according to Dr. Terrace, the action did not necessarily mean that the chimp was making her own label for a new sight; she may simply have been remarking that she saw water and a bird. If she did not routinely combine other adjectives and nouns, Dr. Terrace thinks, it seems unlikely that she was naming the swan in this isolated instance.

"The trouble is," the scientist says, "that the meaning is in the eye of the beholder. Without a well-analyzed film record and a complete listing of all the animal's utterances, any claim of an ape's using language is questionable."

But Dr. Gardner says the proof is already in. "We have loads and loads and loads of evidence of Washoe initiating signing," he said in a telephone interview. "The fact that she sometimes interrupts her teacher is quite normal in the context of sign language."

"The problem with all of Dr. Terrace's claims is that he keeps changing his definitions," he asserted. "If Washoe signs after being asked a question, he claims that's prompting. If she signs something she's seen her teacher sign, that's imitation. If she repeats something she's said before, that's a result of behavior reinforcement, and if she signs something only once, that's an anecdote."

Criteria Depreciated

"If you used the same criteria to judge human children," Dr. Gardner added, "you'd have to conclude that they don't have language either."

In addition to Nim and Washoe, the roster of apes taught language includes Ally, Onan, Tania, Lucy and Bruno, all trained by Dr. Fouts; Lana, Sherman and Austin, which learned the symbolic language "Yerkish" at the Yerkes Regional Primate Center in Atlanta; Sarah, trained to communicate with plastic chips by David Premack of the University of Pennsylvania; Koko, a gorilla conversant with sign language, and Michael, her consort, who live with Francine Patterson, a psychologist, at the Gorilla Foundation in Stanford, Calif., and a dozen others.

Duane Rumbaugh of Georgia State University, who has worked with Lana, Sherman and Austin, welcomes Dr. Terrace's new evidence and says that his own research findings were already pushing him toward the same conclusion.

"We are far more conservative now than we were seven or eight years ago with respect to what an ape can do," Dr. Rumbaugh said. "Lana showed some sensitivity to the rules of grammar, but we have no evidence that she productively comprehended" syntax and the meaning of words at the same time.

Unreliable Behavior

Lana, which did not know the sign for orange, identified one as "apple which is orange," and responded to her first sight of a cucumber by calling it "banana which is green." Presented with problem situations, she made up phrases on several occasions that appeared original and appropriate to the context.

"But her performance was inconsistent," Dr. Rumbaugh said. "We couldn't call it a reliable behavior."

As in the study of Nim, closer examination of videotapes and other records may disclose that Lana was imitating her teachers. Even so, Dr. Rumbaugh notes that his work with chimps has been successful in meeting its primary objective — using the chimp as an animal model to approach the learning problems of mentally retarded children.

Neither Dr. Terrace nor Dr. Rumbaugh has ruled out the possibility of an ape's comprehension of true syntax. Dr. Gardner, who is certain that an ape could reach this level, concedes that the effort would require 15 or 20 years of teaching. Dr. Terrace says that in addition to adequate time, success would require enough money to keep a small team of teachers tied to the project.

Aided by Socialization

"Language is a byproduct of socialization," Dr. Terrace explained. "If that's weak, if the ape is disturbed by constant personnel turnover, language has to suffer. So far, Koko has probably had the strongest ties to her trainer of any of these apes, because they've been together for seven years."

Dr. Patterson, who was a graduate student in psychology when she began her work with Koko in 1972 at Stanford University, thinks Dr. Terrace's negative findings are a result of his project's short duration.

"Koko's data looked like Nim's data before we had consistent, well trained teachers," she said. "Now, however, Koko not only has a good grasp of language but she can make puns and rhymes." Because of a teaching machine that pronounces words as Koko types them, the gorilla has an aural comprehension of English as well, and often reacts to conversations going on in another room, Dr. Patterson reported.

"I agree with Dr. Terrace that no ape's syntax is identical to a human child's," she added. "There's a point where the ape falls behind and stays behind. I'm eager to review my own videotapes to see if they show any of the problems Dr. Terrace found. After that, I will try to refute his claim with solid evidence."

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